Solution – Problem 1: Cost terms

	Variable Cost	Fixed Cost	Period (Selling and Administrative) Cost	Product Cost: Direct Materials	Product Cost: Direct Labor	Product Cost: Manufacturing Overhead	Sunk Cost	Opportunity Cost
1. Wood used in a table ($100 per table)	X			X				
2. Labor cost to assemble a table ($40 per table)	X				X			
3. Salary of the factory supervisor ($38,000 per year)		X				X		
4. Cost of electricity to produce tables ($2 per machine-hour)	X					X		
5. Depreciation of machines used to produce tables ($10,000 per year)		X				X	X*	
6. Salary of the company president ($100,000 per year)		X	X					
7. Advertising expense ($250,000 per year)		X	X					
8. Commissions paid to salespersons ($30 per table sold)	X		X					
9. Rental income forgone on factory space								X†

*This is a sunk cost because the outlay for the equipment was made in a previous period.
†This is an opportunity cost because it represents the potential benefit that is lost or sacrificed as a result of using the factory space to produce tables. Opportunity cost is a special category of cost that is not ordinarily recorded in an organization's accounting records. To avoid possible confusion with other costs, we will not attempt to classify this cost in any other way except as an opportunity cost.

Exercise 2-9 (15 minutes)

1. Product cost; variable cost
2. Conversion cost
3. Opportunity cost
4. Prime cost
5. Sunk cost
6. Period cost; variable cost
7. Product cost; period cost; fixed cost
8. Product cost
9. Period cost
10. Fixed cost; product cost; conversion cost

Exercise 2-12 (30 minutes)

1. a.	Batteries purchased	8,000
	Batteries drawn from inventory	7,600
	Batteries remaining in inventory	400
	Cost per battery	× $10
	Cost in Raw Materials Inventory at April 30	$4,000
b.	Batteries used in production (7,600 – 100)	7,500
	Motorcycles completed and transferred to Finished Goods (90% × 7,500)	6,750
	Motorcycles still in Work in Process at April 30	750
	Cost per battery	× $10
	Cost in Work in Process Inventory at April 30	$7,500
c.	Motorcycles completed and transferred to Finished Goods (see above)	6,750
	Motorcycles sold during the month (70% × 6,750)	4,725
	Motorcycles still in Finished Goods at April 30	2,025
	Cost per battery	× $10
	Cost in Finished Goods Inventory at April 30	$20,250
d.	Motorcycles sold during the month (above)	4,725
	Cost per battery	× $10
	Cost in Cost of Goods Sold at April 30	$47,250
e.	Batteries used in salespersons' motorcycles	100
	Cost per battery	× $10
	Cost in Selling Expense at April 30	$ 1,000

2. Raw Materials Inventory—balance sheet
   Work in Process Inventory—balance sheet
   Finished Goods Inventory—balance sheet
   Cost of Goods Sold—income statement
   Selling Expense—income statement

Problem 2-17 (15 minutes)

1. The controller is correct that the salary cost should be classified as a selling (marketing) cost. The duties described in the problem have nothing to do with manufacturing a product, but rather deal with moving *finished units* from the factory to distribution warehouses. Selling costs include all costs necessary to secure customer orders and to get the finished product into the hands of customers. Coordination of shipments of finished units from the factory to distribution warehouses falls in this category.

2. No, the president is not correct. The reported net operating income for the year will differ depending on how the salary cost is classified. If the salary cost is classified as a selling expense all of it will appear on the income statement as a period cost. However, if the salary cost is classified as a manufacturing (product) cost, it will be added to Work in Process inventory along with other manufacturing costs for the period. To the extent that goods are still in process at the end of the period, part of the salary cost will remain with these goods in the Work in Process inventory account. Only that portion of the salary cost that has been assigned to finished units will leave the Work in Process inventory account and be transferred into the Finished Goods inventory account. In like manner, to the extent that goods are unsold at the end of the period, part of the salary cost will remain with these goods in the Finished Goods inventory account. Only the portion of the salary that has been assigned to finished units that are sold during the period will appear on the income statement as an expense (part of Cost of Goods Sold) for the period. The remainder of the salary costs will be on the balance sheet as part of inventories.

Problem 2-18 (45 minutes)

1.

Meriwell Company
Schedule of Cost of Goods Manufactured

Direct materials:		
Raw materials inventory, beginning	$ 9,000	
Add: Purchases of raw materials	125,000	
Raw materials available for use	134,000	
Deduct: Raw materials inventory, ending	6,000	
Raw materials used in production		$128,000
Direct labor		70,000
Manufacturing overhead		105,000
Total manufacturing costs		303,000
Add: Work in process inventory, beginning		17,000
		320,000
Deduct: Work in process inventory, ending		30,000
Cost of goods manufactured		$290,000

2.

Meriwell Company
Income Statement

Sales		$500,000
Cost of goods sold:		
Finished goods inventory, beginning	$ 20,000	
Add: Cost of goods manufactured	290,000	
Goods available for sale	310,000	
Deduct: Finished goods inventory, ending	40,000	270,000
Gross margin		230,000
Selling and administrative expenses:		
Selling expenses	80,000	
Administrative expenses	110,000	190,000
Net operating income		$ 40,000

Problem 2-18 (continued)

3. Direct materials: $128,000 ÷ 10,000 units = $12.80 per unit.
   Fixed manufacturing overhead: $90,000 ÷ 10,000 units = $9.00 per unit.

4. Direct materials:
   Unit cost: $12.80 (unchanged)
   Total cost: 15,000 units × $12.80 per unit = $192,000.

   Fixed manufacturing overhead:
   Unit cost: $90,000 ÷ 15,000 units = $6.00 per unit.
   Total cost: $90,000 (unchanged)

5. Unit cost for fixed manufacturing overhead dropped from $9.00 to $6.00, because of the increase in production between the two years. Because fixed costs do not change *in total* as the activity level changes, they will decrease on a unit basis as the activity level rises.

Problem 3-12 (45 minutes)

1. Cost of goods sold ..... Variable
   Advertising expense ..... Fixed
   Shipping expense..... Mixed
   Salaries and commissions ..... Mixed
   Insurance expense ..... Fixed
   Depreciation expense ..... Fixed

2. Analysis of the mixed expenses:

	Units	*Shipping Expense*	*Salaries and Commissions Expense*
High level of activity	5,000	A$38,000	A$90,000
Low level of activity.....	4,000	34,000	78,000
Change	1,000	A$ 4,000	A$12,000

Variable cost element:

$$\text{Variable rate} = \frac{\text{Change in cost}}{\text{Change in activity}}$$

$$\text{Shipping expense: } \frac{\text{A\$4,000}}{\text{1,000 units}} = \text{A\$4 per unit}$$

$$\text{Salaries and commissions expense: } \frac{\text{A\$12,000}}{\text{1,000 units}} = \text{A\$12 per unit}$$

Fixed cost element:

	Shipping Expense	*Salaries and Commissions Expense*
Cost at high level of activity ...	A$38,000	A$90,000
Less variable cost element:		
5,000 units × A$4 per unit...	20,000	
5,000 units × A$12 per unit.		60,000
Fixed cost element	A$18,000	A$30,000

Problem 3-12 (continued)

The cost formulas are:

Shipping expense:

A$18,000 per month plus A$4 per unit

or

Y = A$18,000 + A$4X

Salaries and commissions expense:

A$30,000 per month plus A$12 per unit

or

Y = A$30,000 + A$12X

3.

Morrisey & Brown, Ltd.
Income Statement
For the Month Ended September 30

Sales (5,000 units × A$100 per unit)		A$500,000
Variable expenses:		
Cost of goods sold (5,000 units × A$60 per unit)	A$300,000	
Shipping expense (5,000 units × A$4 per unit)	20,000	
Salaries and commissions expense (5,000 units × A$12 per unit)	60,000	380,000
Contribution margin		120,000
Fixed expenses:		
Advertising expense.....	21,000	
Shipping expense	18,000	
Salaries and commissions expense.....	30,000	
Insurance expense	6,000	
Depreciation expense.....	15,000	90,000
Net operating income		A$ 30,000